

Functional Behavior Assessment of Challenging Behavior for Students with
Autism Spectrum Disorder and/or Intellectual Disability

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Abstract

Challenging behaviors are common in children and adults with autism spectrum disorders (ASD) and/or intellectual disabilities (ID). Types of challenging behavior include self-injury, aggression, property destruction, and severe noncompliance. These behaviors have many adverse consequences for the individual, their family members, professional caregivers, and society at large. Challenging behaviors are linked to reduced access to education, limited social interactions with peers, significant increase in family stress, and if left unmanaged these behaviors are more likely to lead to more restrictive interventions such as the use of psychotropic medications, seclusion, physical restraint, and placement in residential care facilities. Functional Behavior Assessment (FBA) has become a widely used procedure in the past two decades and has been a useful tool to determine why challenging behaviors occur. A FBA relies on a variety of techniques and strategies to identify the purpose for specific behaviors and help identify interventions to directly address the problem behavior. Many ethical issues arise in the treatment of challenging behaviors, including the use of aversive interventions, ensuring the clients' rights and dignity, and providing treatment which is both appropriate and timely. The following will present a variety of functional behavior assessment techniques and treatment paradigms for challenging behavior, with a focus on practical determination of the most appropriate methodology.

Introduction

Challenging behaviors are among the most studied problems in the field of developmental disabilities and are common in children and adults with autism spectrum disorders (ASD) and/or intellectual disabilities (ID) (Matson, Kozlowski, Worley, Shoemaker, Sipes, & Horowitz, 2011). This monograph will define challenging behaviors, talk about two types of challenging behaviors more thoroughly (Aggression and Self-Injurious Behavior), then discuss the adverse consequences of challenging behaviors. Physical Restraint (PR) is a one procedure sometimes used to manage high-risk/challenging behaviors for individuals with disabilities. Ethical issues surrounding this topic will be discussed. Major advances have been made in the treatment of challenging behaviors in individuals with ASD and/or ID in the past two decades. Functional Behavior Assessment (FBA) is a term used to describe procedures that are used to determine why challenging behaviors occur. This paper will describe two common models; the first is a rating scale/questionnaire and the second is a functional analysis procedure. Ethical issues involve in the treatment of challenging behaviors will be discussed, such as the use of aversive techniques vs. nonaversives, and using a FBA as compared to no pretreatment FBA. Lastly, interventions for challenging behaviors are presented: Functional Communication Training (FTC) for SIB, and Errorless Compliance Training (ECT) for severe noncompliance and aggression.

Challenging Behaviors

Challenging behaviors are among the most studied problems in the field of developmental disabilities. Research has shown that challenging behaviors are common in children and adults with autism spectrum disorders (ASD) and/or intellectual disabilities (ID). Population studies indicate that between 5 and 15% of individuals with ID display some type of challenging behavior (such as self-injury, aggression, stereotypic behavior, and other problem behaviors), and rates of challenging behaviors are increased if individuals also have ASD (Matson, 2012).

Emerson (2005) defined challenging behavior as “culturally abnormal behavior of such intensity, frequency or duration that the physical safety of the person or others is placed in serious jeopardy, or behavior which is likely to seriously limit or deny access to the use of ordinary community facilities...” (Matson, 2012, p. 26). Interestingly, in this definition there is no reference to specific features or causes of the challenging behavior, rather it is defined in terms of its effects on the individual’s life (Matson, 2012). A behavior is considered to be challenging if it creates a danger to oneself or others, or prevents the individual from taking part in programs or activities in a typical environment. Types of challenging behaviors include, but are not limited to, aggression, self-injurious behavior (SIB), property destruction, and severe noncompliance. The research on aggression and self-injurious behavior regarding individuals with intellectual disability and/or autism spectrum disorder are discussed in the next section.

Types of Challenging Behavior

Aggressive Behavior

Aggressive behavior is one of the most challenging behaviors and also one that can have many deleterious consequences. The most commonly referred form of aggressive behavior is physical aggression, which involves an individual attempting to or successfully injuring another person through physical means (e.g., hitting, kicking, scratching, biting; Luiselli, 2012). Many other behaviors could also be included under the title of aggressive behavior such as: verbal aggression (threatening or yelling at others, bullying), sexual aggression (fondling others), property aggression (throwing objects, defacing property), and even self-directed aggression (also called self-injurious behavior, SIB). Due to the variability in the definition of aggressive behavior, the prevalence rate of aggressive behavior within the ID population is difficult to estimate. It is estimated that 9.8% to 51.8% of individuals across a variety of intellectual and developmental disabilities engage in some form of aggressive behavior (Luiselli, 2012).

Aggressive behavior can have a number of severe consequences. Kanne and Mazurek (2011) reviewed studies on adverse consequences of aggression in people with ID and/or ASD and concluded that aggression is one of the strongest predictors of crisis intervention re-referrals, admission to residential facilities, and the prescription of psychotropic medication. Aggressive behaviors incur considerable hardship on families, teachers, and other service providers. Incidents of aggressive behavior can limit the student's involvement in

educational and social activities due to the possibility of harming others or the fear that others may feel in the presence of aggressive individuals (Emerson, 2005; Luiselli & Slocumb, 1983). Aggression involving physical contact can cause injury to others and may even provoke others to inflict physical injury upon the aggressive individual. Severe aggressive behaviors often result in institutionalization (Antonacci, Manuel, & Davis, 2008) or can lead to loss of community placement (Gardner & Moffatt, 1990). Individuals who exhibit challenging behaviors are also at increased risk of being abused or neglected (Muddford, Arnold-Saritepe, Phillips, Locke, Ho, & Taylor, 2008).

Self-Injurious Behavior

Self-Injurious behavior (SIB) is defined as “behavior directed towards oneself that causes – or has the potential to cause – tissue damage, exclusive of acts associated with suicide, sexual arousal, or socially sanctioned practices” (Matson, 2012, p. 27). Self injurious behavior includes, but is not limited to, head banging, head hitting, and self-biting (these 3 account for more than 50% of all observed cases) hair pulling, eye pressing or gouging, self-pinching, face slapping, finger or arm biting, and scratching (Christiansen, 2009). Studies of individuals with ID indicate that SIB occurs in approximately 10-12% of this population (Emerson, Kiernan, Alborz, Reeves, Mason, & Swarbrick, 2001; Lowe, Allen, Jones, Brophy, Moore, & Games, 2007). A study by Baghdadli, Pascal, Grisi, & Aussilloux (2003) suggests that SIB could be up to five times more prevalent among individuals with ASD than for individuals with ID alone.

SIB is more prevalent among those with ASD and severe ID, compared to individuals with ASD and either mild/moderate levels of ID or no ID; the prevalence of SIB is higher among individuals with more severe symptoms of autism when compare to individuals with less severe autism symptoms; an ASD diagnosis increases the risk of SIB among individuals with ID (Matson, 2012).

SIB is considered one of the most dangerous problems in individuals with intellectual and developmental disabilities (Christiansen, 2009) and is associated with a range of negative consequences. Mandell (2008) noted that SIB is a significant antecedent to the hospitalization of children with ASD. SIB is associated with a number of other side effects, such as increased risk of being placed on powerful medications that can cause serious side effects. SIB may also lead to social and physical isolation of the person, which in turn may restrict opportunities for learning, social development, and community participation (Matson, 2012). The National Institutes of Health (1989) noted the cost of SIB at up to \$100,000 per year for a person with severe SIB. Additionally, the use of mechanical restraints and other intrusive treatments for SIB raises ethical concerns (which will be discussed later on).

Possible Outcomes for Students with Challenging Behaviors

Challenging behavior in individuals with ASD and/or ID has many adverse consequences for the person involved, their family members, professional caregivers, and society at large. These behaviors interfere with the development of optimal adaptive living skills, effective learning, and prosocial interactions

when untreated. Challenging behaviors are linked to reduced access to education, limited social interactions with peers, significant increase in family stress, and challenging behavior restricts the opportunities to interact with the community and may result in rejection by peers and caregivers.

If left unmanaged these behaviors are more likely to lead to more restrictive interventions such as the use of psychotropic medications. Often times there are health risks due to these medications. These medications can result in significant side effects such as weight gain, diabetes, sedation, and extrapyramidal motor problems (and can even cause death if individuals have heart problems). These individuals are also more likely to be exposed to severe or unregulated management behaviors including the use of restraints (physical/human or mechanical), seclusion, and placement in residential care facilities. The use of physical restraint and seclusion can often lead to social exclusion, exclusion from adaptive environments, and in some instances physical injury and death. There are also additional (financial) costs for specialized services.

Due to all the severe consequences of challenging behaviors on individuals, families, and society, it is important they are addressed quickly and effectively.

Physical Restraint

Physical restraint (PR) is sometimes required with people who have intellectual and developmental disabilities (Harris, 1996; Luiselli, 2009; Matson &

Boisjoli, 2009). PR is applied by one or more people, typically trained care providers, holding a person's arms, legs, and torso in a standing, sitting, or supine position ("face-down" positions have been prohibited in many settings because it has been linked to deaths (Mohr & Mohr, 2000; O'Halloran & Frank, 2000)), restricting another person's movement contingent on behaviors that pose a threat to self (self-injury), others (aggression), and the environment (property destruction)" (Luiselli, 2012). Many professionals and regulatory agencies support the belief that PR should only be permitted in emergency situations (Luiselli, 2012). It is important PR procedures are regulated because they: 1) pose a risk of injury and death for both students and staff alike; 2) are frequently use inappropriately by staff; 3) continue to be use despite being ineffective in reducing aggressive behavior; and 4) are often used without adequate oversight, training, or proper implementation (Luiselli, 2012).

In some cases, implementing PR as one component of a comprehensive behavior support plan can be an effective intervention procedure. If incorporated into a behavior support plan, care providers are trained to implement the procedure when a person displays specific problem behaviors. Planned PR should be reserved for the most severe at-risk behaviors. PR would be determined effective when the behaviors that produce restraint decrease in frequency or are eliminated. Regardless of whether PR is used as a planned intervention, it potentially can be misapplied and poses a physical risk to the recipient and the implementer, and in some cases can function as positive

reinforcement to the individual with a disability if the individual is motivated by attention or physical contact.

Physical Restraint in Schools

Because of the increasing number of violent incidents that take place within schools each year, there is a growing safety concern for both students and staff members. Physical restraint is one intervention that many schools or individual staff members have used to manage aggressive student behavior (Luiselli, 2012).

Restraint procedures were traditionally limited to more restrictive placement settings (hospitals, residential treatment centers) but have now become more common within public schools. This increase might have something to do with providing educational treatment of students with disabilities in the least restrictive environment (LRE). Children who had in years past been served in specialized educational settings such as residential or special day schools may now be educated in public school settings, and the behavioral interventions that were traditionally limited to more restrictive settings have migrated with these students to the public schools, and are being used more broadly with all students who display aggressive behaviors in school, whether or not they have a disability. It is estimated that restraints may be implemented as many as 165,000 times each year on students across the nation (Luiselli, 2012).

Although the use of restraint in schools has apparently increased over the last decade, little is actually known about the efficacy of restraint procedures due

to a lack of research (Persi & Pasquali, 1999; Ryan & Peterson, 2004). Today, knowledgeable school administrators view physical restraint as an “emergency” procedure to prevent injury to the student or others when a student is in crisis and displays physical aggression; however, it is difficult to universally define an “emergency” and implementation criteria (especially with the population in question, with various staff ratios, placements, and IEPs), and there is some evidence that restraint may be used for behavioral crises that would not meet the criteria. A study by Ryan, Peterson, Teteault, & Van der Hagen (2004) found staff reported student noncompliance (48.4%) or leaving the assigned area (19.4%) were the leading precipitators of restraint. Other reasons for implementing restraint include property misuse/destruction (7.3%), disrespect (7.3%), disrupting class (6.5%), threatening (3.2%), physical aggression (3.2%), horseplay (3.2%), and harassment (0.8%). Nearly 90% of PR procedures in this study were performed for reasons other than what was permissible in accordance with school policy. Often restraint procedures are used repetitively on students with a history of displaying aggressive behaviors. If restraint procedures must be use repetitively, staff members are applying an ineffective intervention. “The repeated use of physical restraints for any one student or multiple physical restraints across different students should be viewed as failed educational programming” (Luiselli, 2012, p. 260). In these cases, a functional behavior assessment should be conducted in order to properly identify the function of the student’s maladaptive behavior and then provide a more effective behavioral intervention.

Injury/Death Relating to Physical Restraint

It is estimated that as many as 8-10 individuals die each year across agencies and settings due to these interventions (Child Welfare League of America, 2000). Most fatalities are caused by suffocation during a face down floor restraint caused by staff members placing their body weight on the individual's back or chest, choking during a face-up floor restraint, and blunt trauma to the chest in which the individual hits something hard during the initiation of the restraint procedure, resulting in cardiac arrhythmia leading to sudden death. Individuals taking certain psychotropic medications are also at an increased health risk, as these drugs make them more susceptible to respiratory or heart conditions that can lead to sudden death (Luiselli, 2012).

In addition to the risks of physical injury caused by restraint, there are also concerns about associated psychological trauma, particularly with children who have experienced prior physical and/or sexual abuse as well as those who are unable to understand language and communicate fluently (Adams, 2010).

Abuses in the Use of Physical Restraint and Seclusion with Children with Disabilities

The Government Accounting Office (GAO, 2009) recently released a report documenting the abuses in the use of physical restraint and seclusion with children with disabilities. The GAO found hundreds of cases of suspected abuse and death related to the use of these methods (restraint and seclusion) on school children during the past two decades. Examples of these cases include a 7 year

old dying after being held face down for hours by school staff, 5 year olds tied to chairs with bungee cords and duct tape by their teacher and suffering broken arms and bloody noses, and a 13 year old reportedly hanging himself in a seclusion room after prolonged confinement. The cases share the following common themes: they involved children with disabilities who were restrained and secluded, often in cases where they were not physically aggressive and their parents did not give consent; restraints that block air to the lungs can be deadly; teachers and staff in the cases were often not trained on the use of seclusions and restraints; and teachers and staff from at least 5 of the 10 cases continue to be employed as educators.

The recommended use of restraint is that it be applied to control behavior only under the following emergency circumstances and only if all four of these elements exist: 1) the student's actions pose clear, present, and imminent physical danger to self or others; 2) less restrictive measures have not effectively de-escalated the risk of injury; 3) restraint should last only as long as necessary to resolve the actual risk of danger or harm; and 4) degree of force applied may not exceed what is necessary to protect the student or other persons from imminent bodily injury (CCBD, 2009). It is important that all staff members who implement restraints be trained in de-escalation techniques as well as proper restraint techniques. In addition, procedural guidelines regarding documentation and notification should be implemented, and periodic monitoring by administrators or intervention teams to ensure proper techniques are being

implemented, and that these strategies are effective for individual students (Luiselli, 2012).

Treatment of Challenging Behaviors

Functional Behavior Assessment

In the past two decades, major advances have been made in the treatment of challenging behaviors in individuals with ASD and/or ID. To change behaviors, we now focus on what message the behavior is communicating rather than what the behavior looks like (Glasberg, 2006). It's important to remember that challenging behaviors serve a purpose for the individual; the individual who has some need uses a behavior to get his need met.

Understanding why the behavior occurs is essential for the development of an effective and sustainable behavioral intervention (Didden, Duker, & Korzilius, 1997). Functional Behavior Assessment (FBA) is a term used to describe procedures that are used to determine why challenging behaviors occur. This paper will describe two common models: The first is a rating scale/questionnaire developed by Durand, and the second is a functional analysis procedure developed by Iwata and colleagues.

Motivational Assessment Scale (MAS) (Durand, 1986)

The MAS is a quick, user-friendly indirect assessment tool that assesses the functions or motivations of behavior problems. The MAS is designed to help determine which motivator(s) reinforce the behavior (sensory input, escape,

social attention, or tangibles). In short, it helps us better understand why someone does what they do.

To complete the Motivation Assessment Scale, select one behavior that is of particular interest. It is important to identify the behavior very specifically. "Aggressive," for example, is not as good a description as "hits his sister." There are 16 questions which describe situations in which the behavior might occur. The rater circles how often (from never to always) the behavior occurs in different situations. Next, total the scores using the scoring sheet. The results on the scoring sheet suggest what the function(s) of the behavior are. The function with the highest score is the most likely function of the behavior. There might be another function that also has a high score, and this might be a secondary function of the behavior.

Example:

Morgan is a minimally verbal 4 year old who yells when another child tries to play with him. When this happens, the teacher generally comes over to the children tells Morgan that the other children are allowed to play too and not to yell at them. Then the teacher supervises the children so that they learn to play together. At other times Morgan is removed from the activity and his teacher tries to engage him in another activity.

The problem is that Morgan's yelling when other children try joining him gets worse. His teachers are trying to figure out why he engages in this behavior.

Some of them think that it is his way of telling the other child to go away, while others think that he has a hard time sharing.

1st: Select one behavior that is of particular interest. The teacher defines the target behavior as "yelling in a loud voice".

2nd: Once you have specified the behavior to be rated, read each question carefully and circle the one number that best describes your observations of this behavior.

3rd: Add up the scores. If there is a tie for the highest score or if the means of the top two categories are within .25 to .50 points (and you have clearly specified the behavior and setting), then both are considered as influences that may be causing the problem behavior to continue.

In this example, Attention had the highest score suggesting his yelling was probably attention motivated. When he yelled, his teacher would come over to him, talk to him, play with him and the other child, or engage him in another activity. This was a rewarding situation for Morgan and yelling ensured that his teacher would interact with him. Now that his teachers know that Morgan was yelling to get attention, they can start teaching Morgan more appropriate ways of getting his needs met. Escape/Avoidance has the second highest score, suggesting that it may be a secondary function of the behavior. He may be yelling to escape situations that are too challenging for him. His teachers can use this information to teach Morgan more appropriate ways of avoiding difficult situations.

Motivation Assessment Scale

1986 V. Mark Durand, Ph.D.

Name _____

Rater _____

Date _____

Behavior Description

Setting Description

Instructions: The Motivation Assessment Scale is a questionnaire designed to identify those situations in which an individual is likely to behavior in certain ways. From this information, more informed decisions can be made concerning the selection of appropriate reinforcers and treatments. To complete the MAS, select one behavior that is of particular interest. It is important that you identify the behavior very specifically. "Aggressive", for example, is not as good a description as "hits his sister". Once you have specified the behavior to be rated, read each question carefully and circle the one number that best describes your observations of this behavior.

0=Never, 1=Almost Never, 2=Seldom, 3=Half the Time, 4=Usually,

5=Almost Always, 6=Always

FBA of Challenging Behavior 18

Questions	Answers
1. Would the behavior occur continuously, over and over, if this person were left alone for long periods of time? (For example, several hours)	0 1 2 3 4 5 6
2. Does the behavior occur following a request to perform a difficult task?	0 1 2 3 4 5 6
3. Does the behavior seem to occur in response to you talking to other persons in the room?	0 1 2 3 4 5 6
4. Does the behavior ever occur to get a toy, food, or activity that this person has been told that he or she can't have?	0 1 2 3 4 5 6
5. Would the behavior occur repeatedly, in the same way, for very long periods of time, if no one were around? (For example, rocking back and forth for over an hour.)	0 1 2 3 4 5 6
6. Does the behavior occur when any request is made of this person?	0 1 2 3 4 5 6
7. Does the behavior occur whenever you stop attending to this person?	0 1 2 3 4 5 6
8. Does the behavior occur when you take away a favorite toy, food, or activity?	0 1 2 3 4 5 6
9. Does it appear to you that this person enjoys performing the behavior? (It feels, tastes, looks, smells, and/or sounds pleasing.)	0 1 2 3 4 5 6
10. Does this person seem to do the behavior to upset or annoy you when you are trying to get him or her to do what you ask?	0 1 2 3 4 5 6
11. Does this person seem to do the behavior to upset or annoy you when you are not paying attention to him or her? (For example, if you are sitting in a separate room, interacting with another person.)	0 1 2 3 4 5 6
12. Does the behavior stop occurring shortly after you give this person the toy, food, or activity he or she has requested?	0 1 2 3 4 5 6
13. When the behavior is occurring, does this person seem calm and unaware of anything else going on around him or her?	0 1 2 3 4 5 6
14. Does the behavior stop occurring shortly after (one to five minutes) you stop working or making demands of this person?	0 1 2 3 4 5 6
15. Does this person seem to do the behavior to get you to spend some time with him or her?	0 1 2 3 4 5 6
16. Does the behavior seem to occur when this person has been told that he or she can't do something he or she had wanted to do?	0 1 2 3 4 5 6

	Sensory	Escape	Attention	Tangible
	1. _____	2. _____	3. _____	4. _____
	5. _____	6. _____	7. _____	8. _____
	9. _____	10. _____	11. _____	12. _____
	13. _____	14. _____	15. _____	16. _____
Total Score =	_____	_____	_____	_____
Mean Score = (divide the total score by 4)	_____	_____	_____	_____
Relative Ranking (high score to low score)	_____	_____	_____	_____

If there is a tie for the highest score or if the means of the top two categories are within **.25 to .50** points (and you have clearly specified the behaviour and setting), then both are considered as influences that may be causing the problem behaviour to continue.

Functional Analysis (Iwata, Dorsey, Slifer, Bauman, & Richman, 1994)

Many behavior analysts believe that the “gold standard” of FBA is experimental functional analysis. A functional analysis (FA) is an experimental method to determine the function of behaviors. It is a process for determining which reinforcers maintain a behavior and the stimulus conditions and setting events that set the occasion for that behavior. Three strategies are used to gather information: interviews, direct observation, and manipulation of variables assumed to control or influence the target behavior.

The standard functional analysis approach described by Iwata et al. (1982/1994) involves four specific assessment conditions across which the challenging behavior is measure and compared: social disapproval (attention), academic demand (escape), alone (automatic reinforcement), and play (control). Participants generally alternate between 5 to 15 minute sessions of each condition non-consecutively. Most FAs are conducted until stability is achieved.

Iwata's Experimental Conditions

In the play condition (control), the therapy room is equipped with toys, and no demands are placed on the child. The experimenter also delivers brief social and physical attention to the participant, contingent on the absence of SIB, or at least every 30 seconds. SIB is ignored.

In the social disapproval condition (attention condition), the experimenter and participant enter a therapy room that is equipped with a variety of toys. The experimenter tells the participant to play with the toys while they “do some work.” The experimenter sits in a chair across the room and appears to be reading a book or magazine. Contingent on each occurrence of SIB, the experimenter delivers a brief statement of concern (“don’t do that, you will hurt yourself”) while also delivering brief physical attention (patting the person on the shoulder). All other participant behaviors were ignored. The purpose of this condition is to test for the possible function of positive reinforcement in the form of access to attention from others.

The Academic condition (demand/escape condition) requires the experimenter and participant sit at a desk and a task is presented using a 3-step prompting sequence. The tasks have a low probability of occurrence (in that subjects never complete them spontaneously) and are difficult to perform even when physically guided. Social praise is delivered upon completion of the response, regardless of whether or not modeling or physical guidance is required. Contingent upon self-injury at any time during the session, the experimenter terminates the trial and turns away from the subject for 30 seconds.

In the alone condition, the participant is placed in a therapy room alone, with no toys or items of any kind. This condition is designed to test for automatic reinforcement and mimicked the types of “deprived” environments hypothesized to contribute to automatically reinforced behavior.

In the tangible condition a preferred item is delivered to the student contingent on problem behavior, and the item is removed following a set period of appropriate behavior. The tangible condition has become common over the last two decades of functional analysis research, and is generally considered a “standard” condition. However, many researchers caution against including this condition unless caregivers report that the target behavior is associated with a preferred item or activity because of the potential for “shaping up” a false tangible function.

Table 1: *Functional Analysis: Condition Descriptions.*

Condition	Description	Contingencies
Free Play (Control)	No task demands. Intermittent attention as child plays with preferred toys	No programmed consequences
Attention	Child is told to play alone. Adult present in session room	Attention contingent on problem behavior. No programmed consequences for appropriate behavior
Tangible	Intermittent adult attention. Preferred item visible but out of reach. No task demands	Preferred item delivered contingent on problem behavior. Item is removed following a set period of appropriate behavior
Escape	Difficult task presented	Task removed contingent on problem behavior
Alone/Ignore	Child is left alone without toys/materials. Adult is either in the room or just outside.	No programmed consequences for any behavior

Decisions about functions of behavior are made by comparing rates of responding across different conditions. The conditions that result in the highest rates of behavior are assumed to reveal the reinforcers of those behaviors.

Table 2: *Forms and Functions of Problem Behavior* (Hanley, Iwata, McCord; 2003).

Topography	Escape	Attention	Tangible	Automatic	Multiple
SIB	65	59	28	55	15
Aggression	24	9	6	1	10
Property Destruction	0	0	2	0	0
Pica	0	1	0	3	2
Disruption	11	3	1	1	0
Vocalizations	6	3	1	0	4
Noncompliance	1	2	1	0	4
Elopement	0	0	0	0	3
Stereotypy	6	0	0	19	5
Tantrums	2	1	1	0	2
Other	4	5	0	1	3
Aberrant	57	47	12	1	27
Total Number	175	130	52	81	75
Percentage	34.2	25.3	10.1	15.8	14.6

Hanley, Iwata, and McCord (2003) performed a meta-analysis containing information about the functions of a variety of problematic behavior. It is important to point out that this meta-analysis contains all types of problematic behaviors; it doesn't just focus on the high-risk/challenging behavior. As shown from the chart, they found 34.2% of problem behavior was motivated by escape, followed by attention (25.3%), and 10.1% of problematic behavior was motivated through access to tangible items. Automatic reinforcement was implicated in 15.8% of cases. Finally, multiple reinforcement contingencies were identified in 14.6% of cases. A small proportion of cases (4.1%) were interpreted as undifferentiated by their authors.

Functional Analysis - Advantages and Disadvantages

One of the disadvantages of conducting a FA is that it is very time consuming. Determining the clear function of a target behavior may take several weeks to complete, depending how many sessions can be conducted per day. A brief FA has been developed which is about a 90-minute assessment, and only one or two sessions of each condition are conducted. But, with a shorter assessment also comes the risk of incorrectly identifying the function of the behavior. Another disadvantage is that there is the possibility of reinforcing potentially dangerous problem behavior. This is an ethical concern which will be discussed further in the next section. In addition, the training demands are high; it is very important for individuals to be well trained to avoid causing harm. Some people also voice concerns that a functional analysis will teach an individual that

their inappropriate behavior is an effective method of communication and that they will have to “unlearn” this after the assessment process. However, others believe that exposing someone with ASD/ID to a FA might actually help an individual to unlearn a behavior more quickly (Glasberg, 2006). This is because problem behaviors are usually reinforced inconsistently; in everyday life the child never knows which instance of behavior will be reinforced (like gambling). During the assessment process, the individual is reinforced for each instance of behavior. The continual pattern of reinforcement actually teaches people to be less persistent. Glasberg states “if we take a behavior out of the intermittent reinforcement schedule that it receives in everyday life, and place it on the continuous schedule that it receives during a functional analysis, then the behavior may actually persist for less time during intervention” (p. 100-101). Another advantage of a functional analysis is that it experimentally confirms or disconfirms a hypothesis. It demonstrates functional relationships, and it is performed in a controlled setting conducive to treatment analysis.

Ethical Issues

Some major ethical issues involved in the treatment of challenging behaviors are that some don't believe in the use of aversive techniques, while others may believe not incorporating aversives into the intervention is not considered “best practice” (this will be discussed more thoroughly in subsequent sections). In addition, there are always concerns about ensuring the clients' rights and dignity throughout treatment. The next issue is that some severe

behaviors must be addressed quickly before physical damage is done; for example, an individual with a self-injurious behavior such as eye-gouging, which could possibly lead to blindness warrants immediate and drastic intervention. Although a functional analysis may be considered “best practice” and correctly identify the function of the behavior, it is not the quickest way to address the problem behavior and get it to stop. All clients have the right to have an effective treatment. This makes us think they all should have a functional assessment completed so the underlying problem is addressed. But it is also ethical for a treatment to be both appropriate and timely. A potential ethical issue with any form of FBA is that treatment is not designed and implemented until assessment is finished, which can require many hours or even days (Vollmer & Smith, 1996). Clinicians have a fundamental responsibility to not harm their clients nor to allow harm to occur under their purview (Bailey & Burch, 2011). When performing a FA, a serious ethical concern arises in the case of serious self-injury because the target behavior would be allowed to occur in many contexts to determine the function. Despite the possibility that harmful behavior will be temporarily reinforced (and thus increased) during FA sessions, it is important to point out that a properly conducted FA does not increase the risk of harm to participants relative to that which they encounter in their everyday environment (Iwata et al. 1994). If it is ethically acceptable for a target behavior to occur outside FA sessions, then the same should hold true within such sessions, although precautions to prevent serious harm might be required (Matson, 2012). Because of the potential to strengthen harmful behavior temporarily during an FA,

minimizing occurrences of the target behavior to the lowest number (and intensity) sufficient to reveal controlling variables is an ethically sound goal.

Protective equipment could possibly be used in the analysis to protect the clients from harm, but it may call into question the validity of the obtained results.

Ethical Issue/Controversy – Functional Behavior Assessment

As stated earlier, one controversy relating to FBA is the question: Do interventions have to meet the function of the challenging behavior as long the behavior stops? Take for example a severe self-injurious behavior such as swallowing things that aren't edible. As stated above, do you need to do an FBA/analysis or not? Most investigations within this limited literature suggest that function-based interventions produce better treatment outcomes, but the findings are not universally positive (Matson, 2012).

There is a growing consensus that FBA is in general "best practice" in developing behavioral interventions (e.g., Gresham, Watson, & Skinner, 2001; Steege & Watson, 2008). Several authors have suggested conducting FBAs prior to selecting school-based intervention selection will produce better treatment outcomes compared to selecting interventions with no FBA data (e.g., Asmus, Vollmer, & Borrero, 2002; Crone & Horner, 2000; Vollmer & Northup, 1996). Given that "best" practices are evidence-based, one would expect there to be more compelling data clearly showing that interventions based on FBAs are significantly more effective compared to alternative interventions. In reality, many studies have produced conflicting results. For example, one study by Schill,

Kratochwill, and Elliott (1998) compared treatments based on FBAs to standard treatment packages. Nineteen children in Head Start who displayed persistent problem behaviors were randomly assigned to one of two groups. Teachers of children in Group 1 met with trained consultants to functionally assess problem behaviors and develop interventions based on the hypothesized functions. Teachers of group 2 were given a self-help manual that described strategies for intervening with difficult behavior. Results found no significant differences between the function- and non-function-based treatments. Gresham, McIntyre, Olsen-Tinker, Dolstra, McLaughlin, & Van (2004) reviewed 150 school-based intervention studies over a 9-year period (1991-1999). This meta-analysis revealed that treatments preceded by FBAs were no more effective than those in which FBAs were absent (or at least not reported). Similar results were found in meta-analyses of autism interventions to reduce self-stimulatory behavior (Steffey, 2005) and self-injurious behavior (Christiansen, 2005/2009). Table 9 from Christiansen's (2009) research has been included. This researcher found the effect size of from using a FBA (-4.05) and FA (-3.31) was quite large, but effect size from no FBA/FA or not indicated was also substantial (-3.30). The effect sizes between these groups were not found to be significantly different, suggesting that treatment effectiveness was not influence by the implementation of a pretreatment functional assessment.

Other ethical considerations include the amount of resources required (time and personal investment) and the potential of self-injury during assessment procedures (Christiansen, 2009). There is question as to whether the time and

resources would be best spent simply teaching key skills rather than on conducting a FBA or FA. The time spent on these procedures may also unnecessarily delay treatment and may be unethical in situations if there is risk of serious immediate harm to the individual. Another ethical principle to consider is that of avoiding unnecessary harm to the individuals. The concern for many is that functional analyses are designed to elicit the problem behaviors (such as self-injury) under controlled experimental conditions in order to determine its function. There is even a possibility that the challenging behavior could be shaped with new contingencies within the analyses.

A good deal more research is needed to provide a firm empirical base for the use of FBAs prior to school-based treatment planning. Until further research is conducted, Matson (2012) believes, there are not sufficient data to conclude with confidence that interventions tied to FBA are always, or even typically, more effective than alternative interventions for reducing undesired target behaviors in school settings. There may be many instances where an FBA is simply not warranted for effective intervention, and in these cases, ethical conduct might involve behavioral interventions that are not preceded by an FBA.

FBAs can play an invaluable role in developing effective treatments for reducing undesired behavior in school settings, but an FBA is not always needed. Good interventions are those which produce desired and lasting effects, regardless of how the interventions are selected or their modality (Poling, 1994; Poling, Ehrhardt, Wood, & Bowerman, 2010). "Given the extant literature, in our opinion the widespread use of FBA is easily justified on both ethical and practical

grounds, but it is inappropriate to elevate its use to an ethical imperative (Matson, 2012, p.223).”

Table 9. Effect Sizes by Variable

Moderator Variable	N	Mean Effect Size
Diagnosis/Classification		
DD/ID/MR	152	-3.62*
Autism Spectrum (with or without ID/MR)	47	-2.40
Genetic Disorders/Syndromes	25	-3.51
Gender		
Male	128	-3.16
Female	96	-3.59
SIB Type		
Head Banging	47	-2.22
Self-Hitting/Slapping	23	-2.79
Self-Biting	33	-3.41
Hand-Mouthing	14	-3.82
Multiple	86	-3.42
Other	21	-4.55*
Language		
Verbal	14	-3.15
Nonverbal	77	-3.50
Not Indicated	133	-3.22
Sensory Impairment		
Visually Impaired/Blind	31	-4.33*
Hearing Impaired/Deaf	8	-4.37
Combination	21	-3.39
Not Indicated	164	-3.11
Ambulation		
Ambulatory	9	-3.99
Nonambulatory	38	-3.79
Not Indicated	177	-3.22
Pretreatment Functional Assessment		
Functional Behavior Assessment	14	-4.05
Functional Analysis	77	-3.31
None/Not Indicated	133	-3.30
Treatment Type		
Nonaversive	58	-2.33
Aversive	94	-3.67**
Communication	11	-3.32
Sensory Stimulation	7	-.89
Combination: Nonaversive & Aversive	46	-4.19***
Combination: Aversive & Communication	8	-2.91
Implementer		
Professional	175	-3.32
Teacher	24	-3.14
Parent	9	-3.78
Combined	10	-3.48
Other	3	-3.18
Not Identified	3	-5.47

Table 9: Effect Sizes by Variable (Christiansen, 2009, p.101)

Ethical Issue/Controversy – Use of Aversive Interventions

The results of the Christiansen (2009) meta-analysis raise some questions to be considered in the ethical decision-making process with regard to treating challenging behaviors in children and adolescents with developmental disabilities. The study found that interventions using a non-aversive approach resulted in an effect size of -2.33 (large effect), while interventions utilizing an aversive approach had an effect size of -3.67 (also a large effect). The combination of non-aversive and aversive interventions resulted in the largest effect size of -4.19. This data suggests that interventions which combine both non-aversive and aversive strategies are significantly more effective for reducing SIB compare interventions that rely solely on non-aversive strategies.

The Positive Behavior Support (PBS) model has been developed as an alternative to the use of aversive procedures. The PBS model emphasizes the use of stimulus-based interventions (e.g., expansion of choice, curricular modification, manipulation of setting events) and reinforcement-based interventions (e.g., functional communication training, self-management) while minimizing or completely eliminating the use of any aversive techniques. While these efforts are admirable and appealing to the humanistic values, there is some question as to whether a solely positive approach can adequately address all problem behaviors in all situations (Christiansen, 2009). The results of the Christiansen meta-analysis suggests that the use of aversives (alone or in combination with nonaversives) provide significantly greater reduction in some challenging behaviors (SIB) than using nonaversives alone. Therefore, an all-

positive approach may not always be the most ethical approach. For example, if a child is at serious risk of physical danger (such as internal organ damage from hitting), the unpleasantness of an aversive procedure (such as water mist or odor) may outweigh the risk of continued self-injury. Although aversive techniques are shown to be more effective, these procedures may not be appropriate for all individuals. It is important that clinicians provide the most effective treatments, taking into consideration ethics, data, but most importantly individual needs.

In conclusion, the meta-analysis reveals that when treating individuals with developmental disabilities for self-injurious behavior, results will be maximized if treatments use either aversive procedures or a combination of aversive and nonaversive techniques. The analysis also found that treatments based on a pretreatment functional assessment or functional analysis were no more effective than treatments implemented without a pretreatment assessment. This leaves some question as to the value of performing FA and FBAs as a regular component of treatment due to the amount of time and cost involved as well as the possibility that interventions may be equally effective whether or not they are performed. Next, two treatment approaches are discussed: Functional Communication Training (FTC) for SIB, and Errorless Compliance Training (ECT) for severe noncompliance and aggression (although both intervention strategies are useful for handling a variety of challenging behaviors).

Two Treatment Approaches

Functional Communication Training

Durand & Carr (1991) suggest that SIB is often a form of communication, and if individuals are taught a more appropriate way to communicate, they will use the communication behavior rather than the SIB as a more accessible means to achieve their goal. The purpose of Functional Communication Training (FCT) is to teach individuals communication behaviors as a replacement for maladaptive behavior.

FCT involves identifying the function of the behavior then teaching an appropriate behavior that will serve the same purpose for the child. FCT can help people acquire the skills to request breaks, seek help, and independently meet their own needs. For example, in FCT, the individual is taught an alternative mand to request reinforcement (e.g., to sign “please” for attention; Christiansen, 2009).

Research demonstrates that FCT skills can be effective in reducing SIB, effects are well maintained over time, and FCT generalizes well to other contexts such as homes, school, employment, and community locations (Durand & Carr, 1991).

FCT requires that a FBA be conducted to identify the function of the challenging behavior. The next step is to determine a more desirable or acceptable form of communication for the child to use as a replacement for the challenging behavior. This replacement behavior should be something that: 1)

the child is capable of doing; 2) can be taught very easily; 3) will be easily noticed and acknowledged whenever the child uses it; and 4) works quickly for the child.

The replacement behavior can involve speech, gestures, signs, or pictures, as long as it is something readily available and appropriate to the child's developmental level. To do this, identify the child's skills (especially communication skills) and determine if the child is able to use words to communicate or is more likely to point to things or make gestures. Replacement behaviors might include having the child communicate messages such as "I'm hungry," "I'm tired and want to take a break," "May I play with that toy?" "No, thank you," or "Please help me." The child can communicate these messages through a variety of means such as using words, sign language, or pointing to pictures.

Once a replacement behavior is selected, the next step of FCT involves ignoring the challenging behavior and prompting and acknowledging the use of the replacement behavior. It is important to take advantage of natural opportunities to encourage and acknowledge the replacement behavior. Pay close attention to the individual and prompt them to use their new skill whenever appropriate. It is also very important to make certain that all of the child's new communicative requests are honored, especially early on. For FCT to be effective, the new skill should work better for the child than the old challenging behavior. If the old challenging behavior works better to meet the child's needs, then the child is likely to revert to using that instead of the replacement behavior.

Lastly, be persistent with the intervention. Initially, the child might use the challenging behavior more often, but continue to be consistent until the child understands that the new skill will be useful in obtaining what he wants (Dunlap & Duda, 2004).

FCT Steps

Step 1: Identify the function/purpose of the behavior – perform a FBA.

Step 2: Determine a more desirable/acceptable form of communication for the child to use instead – replacement behavior,

Step 3: Ignore the challenging behavior, prompt and acknowledge the use of replacement behavior.

Errorless Compliance Training

Errorless Compliance Training (ECT) is an intervention used to improve a wide range of oppositional and maladaptive behaviors. It is particularly effective among children between the ages of 3-8; however, it can be used with older children with varying degrees of success. This intervention utilizes stimulus fading techniques to obtain child compliance with parental or teacher requests. ECT stems from behavioral momentum and high probability requests. Similar to behavioral momentum and high probability requests, this approach is success-oriented and focuses on increasing compliance through positive actions. Errorless compliance training involves arranging circumstances that increase the probability of child prosocial behavior. This increase provides frequent

opportunities for delivery of praise, warmth and responsiveness to the child following desired child responses (Di Adamo, 2000).

Noncompliant responses are treated as “errors.” Tasks that are relatively easy for a child to perform and normally receive high levels of cooperation are initially presented and reinforced. More difficult conditions are gradually introduced to minimize errors, until the student responds to the difficult task with the same high rate of correct responses as to the simple tasks (Ducharme & Popynick, 1993; Ducharme, et al., 1994; Ducharme, 1996).

Prior to the intervention, the probability of compliance to specific requests should be determined using a questionnaire and observational analysis. Parents or teachers complete the Compliance Probability Questionnaire, which can be modified to fit with the students’ developmental level or behavioral/academic needs. Each request is rated as a Level 1 (almost always, 76-100%), Level 2 (usually, 51-75% compliance), Level 3 (occasionally, 26-50%), Level 4 (rarely, 0-25%), or as an unlearned request. The importance of each request to the rater is also recorded in order to prioritize items for compliance. Next, 6 to 8 requests from each probability level are selected. The child should be able to complete the task within 30 seconds. Training is provided to the parent or teacher on how to give effective requests (appropriate tone, distance, single request, eye contact). Next, a sequence of baseline data is taken. To do this the parent or teacher delivers each request to the child at least once per day until data has been gathered for up to 10 repetitions per request. Throughout the baseline period, the parent/ teacher should react as they typically would to both

compliant and noncompliant responses. From this data, the probability of a child's compliance is calculated by dividing the total number of compliant responses by the total number of requests. Requests are then divided into the 4 probability levels, and at least 5 requests per level are selected for inclusion during the treatment phase of the intervention. The parent or teacher delivers each of the Level 1 requests 3 times per day for at least a week (and records the response following each request). Transition to the next level occurs after 3 consecutive sessions during which cooperation to requests approximates or exceeds 75%. To transition to the next level of requests, a combination of requests is provided from both levels with an initial ratio of 2:1 for Level 1 and Level 2 requests, after which the ratio is reversed. If 75% compliance is maintained then they proceed to the Level 2 request phase. The transitions to the following levels (Levels 3 and 4) are the same. While progressing through the levels, the parent or teacher can use requests from previous levels, but avoid requests from subsequent levels (Ducharme & Popynick, 1993; Ducharme, Lucas, & Pointes, 1994; Ducharme, Pontes, Guger, Crozier, Lucas, & Popynick, 1994; Ducharme, 1996).

Compliance Probability Checklist

Child's Name: _____ Date: _____ Completed By: _____

Listed below are a series of requests you may present to a child in a given day. What is the likelihood that the child will comply to this request if the request is stated only once? Please check the appropriate box beside each request.

	Almost Always 76-100%	Usually 51-75%	Occasionally 26-50%	Rarely 0-25%	Skill Not Learned	This Request is important to me	Group / Ind.
DRESSING							
Take off your _____							
Hang up your _____							
Get your _____							
Other:							
HYGIENE							
Wash your Hands							
Turn on the tap							
Turn off the Tap							
Flush the toilet							
Use the soap							
Dry your hands							
Other:							
SNACK							
Come to the table							
Sit in your chair							
Pass the _____							

	Almost Always 76-100%	Usually 51-75%	Occasionally 26-50%	Rarely 0-25%	Skill Not Learned	This Request is important to me	Group/ Ind.
Eat your _____							
Drink your _____							
Wipe your _____							
Other:							
PLAY							
Go get the _____							
Play with the _____							
Colour the _____							
Pick a toy/Activity							
Clean up the _____							
Come here							
Come for _____							
Sit down for _____							
Put the toy / activity away							
Put toy/activity in the _____							
Other:							
GENERAL							
Come here							
Sit down							
Stand up							
Stand in Line							
Line up for _____							
Bring me _____							
Get your _____							
Other:							

Adapted from Ducharme & DiAdamo (2005)

ECT Steps

Step 1: Complete Questionnaire and observational analysis to determine probability of compliance.

Step 2: Select 6-8 requests from each probability level.

Step 3: Train teacher/parent to give effective requests.

Step 4: Baseline.

Step 5: Calculate probability based upon baseline data (total number of compliant responses divided by total number of requests).

Step 6: Divide requests into 4 levels, 5 requests selected per level..

Step 7: Deliver Level 1 requests 3 times/day. Transition to next level after 3 consecutive sessions in which cooperation approximates or exceeds 75%.

Step 8: During transition, provide requests from both levels. Avoid requests from subsequent levels.

Conclusion

It has been well established that individuals with ASD and/or ID are at risk for various types of challenging behavior. Some of the most high-risk/challenging behaviors include self-injury, aggression, property destruction, and severe noncompliance. By definition, a behavior is considered “challenging” if it creates a danger to oneself or others, or prevents the individual from taking part in programs or activities in a typical environment. There are many adverse consequences of challenging behaviors so they are very important to address quickly. These behaviors interfere with the development of optimal adaptive living

skills, effective learning, and prosocial interactions when untreated. In addition, these individuals are more likely to be exposed to severe or unregulated management behaviors.

Physical restraint and ethical issues associated with its use were discussed. PR is sometimes required with people who have intellectual and developmental disabilities. It is important PR procedures are regulated because they 1) pose a risk of injury and death for both students and staff alike, 2) are frequently use inappropriately by staff, 3) continue to be use despite being ineffective in reducing aggressive behavior, and 4) are often used without adequate oversight, training, or proper implementation (Luiselli, 2012). Restraint procedures have now become more common within public schools. Although the use of restraint in schools has apparently increased over the last decade, little is actually known about the efficacy of restraint procedures due to a lack of research (Persi et al., 2004). Research has also demonstrated that restraint procedures have often been used for behavioral “crises” that would not meet criteria for an emergency situation (Ryan, et al. 2004). The Government Accountability Office (GAO) released a report in 2009 documenting the abuses in the use of physical restraint and seclusion with children with disabilities. The GAO found hundreds of cases of suspected abuse and death related to the use of these methods (restraint and seclusion) on school children during the past two decades. The recommended use of restraint is that it be applied to control behavior only in emergency situations when the student’s actions pose clear, present, and imminent physical danger to self or others and less restrictive

measures have been effective in reducing risk of injury. The restraint should last only as long as necessary and the degree of force applied should also not exceed what is necessary (CCBD, 2009).

In the past two decades, major advances have been made in the treatment of challenging behaviors in individuals with ASD and/or ID. Functional Behavior Assessment (FBA) is a term used to describe procedures that are used to determine why challenging behaviors occur. Two common models were discussed: Motivational Assessment Scale, and a traditional Functional Analysis.

Two treatment approaches were presented which have been shown to be successful interventions for challenging behaviors. Functional Communication Training is used to teach individuals communication behaviors as a replacement for maladaptive behavior. It involves identifying the function of the behavior then teaching an appropriate behavior that will serve the same purpose for the child. Errorless Compliance Training utilizes stimulus fading techniques to obtain child compliance with parental or teacher requests. It involves arranging circumstances that increase the probability of child prosocial behavior, and provides frequent opportunities for delivery of praise, warmth and responsiveness to the child following desired child responses.

The issues of pretreatment functional behavior assessment were discussed, including doubts regarding the ethical case for the use of functional assessment. The practice of pretreatment functional assessment has gained popularity in recent years; some state that FBA is in general “best practice” in developing behavioral interventions however the results of five recent meta-

analyses have found that interventions based on FBA were no more effective than interventions that were not based on FBA (Christiansen, 2005/2009; Gresham, McIntyre, Olsen-Tinker, Dolstra, McLaughlin, & Van, 2004; Stage & Quiroz, 1997; Steffey, 2005). This data suggests that functional behavior assessment and analysis may not be as beneficial as previously assumed.

Other ethical considerations include the amount of resources required and the potential of self-injury throughout the assessment. The time spent on these procedures may also unnecessarily delay treatment and may be unethical in situations where there is a risk of serious injury. FBAs can play an invaluable role in developing effective treatments for reducing undesired behavior in school settings, but an FBA may not always be warranted. The results of many studies discussed suggest that treatment effectiveness is not enhanced by the use of these assessments and it is difficult to draw firm conclusions about the appropriateness of their use. These factors need to be considered in the ethical decision-making process when determining the use of functional assessment procedures in the treatment of challenging behaviors.

Another ethical/controversial issue discussed was the use of aversive interventions. One meta-analysis presented (Christiansen, 2009) found that interventions using a combination of non-aversive and aversive interventions resulted in the largest effect size, suggesting that interventions which combine both non-aversive and aversive strategies are significantly more effective in treating individuals with developmental disabilities for self-injurious behavior.

Positive Behavior Support (PBS) has been a popular method to address problem behavior and was developed as an alternative to the use of aversive procedures. While these efforts are admirable and appealing to humanistic values, there is some question as to whether a solely positive approach can adequately address all problem behaviors in all situations (Christiansen, 2009). As the meta-analysis revealed, an all-positive approach may not always be the most ethical approach. In some instances, aversive procedures may be inappropriate. In conclusion, there are many ethical issues and controversies in which there are no correct answers, clinicians have an ethical obligation to provide the most effective treatments, and must be careful that decisions regarding treatment are individualized, and based on a strong consideration of both ethics and data.

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